

## Information

# Office Diagnosis of Epididymitis, Epididymo-orchitis and Orchitis

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PAINFUL SCROTAL LESIONS constitute a small proportion of emergency presentations of urologic complaints, being eclipsed by ureteral colic and urinary tract infection. For this reason, these lesions are poorly diagnosed and frequently managed in a rather confused fashion. The recognized reticence of many junior medical students to "handle the scrotum" when learning the fundamentals of physical examination is retained to a minor degree by many physicians. This reticence often results in further obscuring an accurate diagnosis, because a clear knowledge of normal anatomy is lacking. It seems appropriate, therefore, to begin with a brief discussion of the normal findings on examination of the scrotal contents. These findings are reproducible and easily elicited, and form a basis for establishing the abnormal findings that may be present during acute inflammatory disease.

## Anatomy

The scrotal contents and their relative positions can be most accurately and easily identified with the patient standing, facing the seated examiner. Consistency in this regard aids accuracy of diagnosis by fixing the *normal* in the examiner's mind.

The various layers of the abdominal wall contribute to the scrotal wall, and one of the most

important of these is the cremasteric muscle—an extension of the internal oblique musculature. This muscle retracts the testes upwards as a protective mechanism during cold or sudden trauma. In the presence of inflammation or a substantial increase in testicular mass, such as may occur with tumors, this muscle loses its retractile capacity compared with the normal opposite side. Similarly, the dartos muscle (an extension of the fasciae of Camper and Scarpa) which causes the continuous involuntary contraction and relaxation of the scrotal skin is, in effect, paralyzed when there is pronounced inflammation of the scrotal contents. The scrotum assumes a reddened, glistening appearance, and the normal rugal folds are effaced.

The testes are elongated ovoids, with the long axis directed vertically. The epididymis characteristically is flattened along the long axis of the testes in a posterolateral orientation—on the side away from an examiner seated in front of the patient. One can normally distinguish clearly between the smooth testis and the somewhat irregular epididymis closely applied to it. The vas deferens lies on the posterior surface of the spermatic cord and is easily palpable as a firm cord-like structure about 3 mm in diameter. The softer cord structures containing the spermatic artery and its venous drainage, the pampiniform plexus, lie between the vertical vas and the examiner. An important exception to the posterior location of the vas deferens occurs when the epididymis lies on the anterior testicular surface, and in this instance the cord is, likewise, anterior. This fact is important to remember when searching for the vas while attempting to carry out a vasectomy. The appendix testis and appendix epididymis are not usually palpable, although readily identified on the exposed testicle during scrotal surgical procedures. Both structures are located on the upper portions of the testis and epididymis. These are müllerian and wolffian duct remnants, respectively. The epididymis is generally differentiated into a thickened upper portion (head or globus major) and a thinner, tapering lower portion that trails out to form the vas deferens (globus minor).

## Epididymitis

Epididymitis is one of the painful lesions involving the scrotal contents. It rarely occurs in prepubertal males and, when it does, is almost always associated with a urinary tract infection. The usual case has no demonstrable urinary infec-

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tion, and the patient may not even be febrile. Its cause is unknown, but may relate to reflux of urine into the vas deferens during a Valsalva maneuver with subsequent chemical irritation, viral infection or other obscure phenomena. This explains the not infrequent history of onset of symptoms following strenuous activity such as lifting. It most often begins as a rather subtle complaint, a vague consciousness of the side of involvement. This progresses to discomfort and, finally, pain and moderate tenderness within 12 to 48 hours. The pain is rarely acute, but in some cases occurring on the right side there has been such severe guarding as to lead to an erroneous diagnosis of appendicitis. As the pain progresses, the epididymis becomes enlarged. Early cases may present as a precisely localized area of tenderness in one region of the epididymis, generally the globus major. Within hours, however, the epididymal swelling becomes more general. There may be an associated hydrocele, which while in the early stages may easily transilluminate. (All scrotal lesions should be transilluminated to differentiate solid lesions, such as testes tumors, from cystic masses such as hydroceles or spermatoceles.) Later, however, the fluid becomes turbid, and transillumination is less rewarding. In some cases, there is only epididymal involvement. More often than not, however, the testis becomes involved in the inflammation, and orchitis results. This compounds the morbidity and raises the specter of malignancy, because when the tenderness subsides, except for the history of inflammation, these lesions suggest large testicular tumors. They do not transilluminate, are massively enlarged, and the normal testicular/epididymal anatomy is temporarily obscured.

Treatment is empiric, with the usual approach being bedrest and cold compresses during the acute phase and warm sitz baths and a scrotal support during the convalescent phase. Broad spectrum antibiotic therapy is generally utilized, although rationale for it in the absence of documented infection is questionable. It has been suggested that acute epididymitis is usually associated with coliform or pseudomonas urinary tract infection in men over 35 years of age and with gonococcal or chlamydial urethritis in younger men.<sup>1</sup>

In the later stages, the striking size of the scrotal mass may confound even a physician who was secure initially in his diagnosis of epididymo-orchitis. It is crucial that the condition of con-

valescent patients be followed carefully over three to six months to make *sure* that the scrotal findings return to normal and that the testis returns to normal size over the ensuing period. At any time that the mass does not appear to be regressing or, even worse, appears to be increasing in size beyond the acute phase, immediate inguinal exploration of the offending lesion is mandatory to rule out the presence of a testicular tumor. A trans-scrotal approach is contraindicated in lesions where a tumor is suspected. In the finally resolved case, the testis will return completely to normal size, and the epididymis will retain an easily palpable area of thickening or scar which may never disappear.

Careful follow-up of patients with these lesions cannot be too strongly emphasized. Most experienced urologists have seen suspected cases of epididymo-orchitis that subsequently turned out to be testicular malignant lesions. Whether the tumor actually causes the epididymitis or whether the epididymo-orchitis obscures the initial development of the cancer in these perplexing cases is unknown. One worries most in treating patients who either did not consult a physician in the early stage of the epididymitis or, even worse, who did not see a physician until the pain had subsided. In these instances, one must take the patient's word that pain was present at the outset, and see him frequently until one is satisfied that the testis is normal. Any delay in resolution or atypical course should indicate surgical exploration.

### **Torsion of the Spermatic Cord**

Included in the differential diagnosis of painful scrotal masses is torsion of the spermatic cord. This entity, usually referred to incorrectly as testicular torsion, frequently is misdiagnosed as epididymo-orchitis. This error is made in most city hospital emergency rooms five or six times each year and always results in the unnecessary loss of a testis. The two lesions, torsion and epididymitis, are similar only in that each one is painful. However, in every other aspect, they differ, and even the degree of pain in each is dissimilar. In torsion, the pain is sudden and acute. The patient is well one instant and doubled over the next. The pain is relatively short-lived, and if physician contact is delayed for even 24 hours, the pain generally has lessened. These patients are dramatically affected initially; they may cry out or even vomit with the severe pain. There are two peak age incidences; the first is in the newborn

period when the pain is completely overlooked. The second peak incidence occurs around the time of puberty and extends into the 20's. These older patients overlap with those who present with epididymo-orchitis, and these are the ones who are often misdiagnosed as having epididymitis. Given antibiotics and analgesics, they are reassured that the pain will go away. It always does, but the infarcted testicle later requires removal, and fertility has been placed at risk unnecessarily. Because torsion can and does occur subsequently in the contralateral testis, the possibility of total loss of testicular function arises.

Besides the acute nature of the pain, there are other useful differentiating characteristics. The testis in torsion is high-riding in the ipsilateral scrotum. The twisted spermatic cord becomes foreshortened, leading to the pathological retraction of the testis superiorly. The ipsilateral spermatic cord in torsion is normal. This can sometimes be palpated in the inguinal canal and then compared with the opposite side. If the cord diameters are similar, torsion is the most likely diagnosis. When epididymitis is present, the ipsilateral cord is not only indurated, but generally tender, and the ipsilateral seminal vesicle and hemiprosstate may be similarly swollen on rectal examination. Most authors describe pyuria as a helpful finding in substantiating a diagnosis of epididymitis. Pyuria is absent in torsion of the spermatic cord. Similarly, in early torsion of the cord, the patient is usually afebrile, whereas in epididymitis a low-grade fever is often found.

Two additional diagnostic techniques which can be useful in the differentiation of epididymitis and torsion of the spermatic cord are the use of the Doppler instrument<sup>2</sup> and scrotal scanning.<sup>3,4</sup>

The Doppler instrument is a simple mechanism that measures blood flow past a point as pulsations interfere with a constant ultrasonic wave. The

pulsations are then magnified to audible level. Torsion is associated with absence of blood flow to the affected testis, whereas increased flow is noted in epididymitis associated with inflammation and hyperemia. This technique is noninvasive, easily accessible, quick and quite useful in confirmation of clinical opinion.

Nuclear angiography is also useful in this clinical situation. This technique again measures presence or absence of blood flow to an affected testis and has been quite reliable, although it is not as readily available in an office as is the Doppler instrument. One sees a *cold spot* usually surrounded by a *halo* of increased activity in torsion of the spermatic cord as opposed to increased isotope concentration, or *hot spots*, in inflammatory conditions with an epididymitis/orchitis.

The implications of a mistaken diagnosis of epididymitis in a patient who actually suffers from torsion of the spermatic cord are so unfortunate that to err on the side of surgical differentiation in questionable presentation seems wise. Because the cause of pubertal torsion is a congenitally elongated epididymal mesentery, allowing easy rotation of the testis on the cord, contralateral surgical exploration must be carried out to fix the opposite testis in place. In the absence of pain, this situation can be easily ascertained, because the testis, instead of being in its normal vertical orientation, lies horizontally in the scrotum. This physical finding is helpful, not only in establishing a diagnosis in the presence of acute contralateral torsion, but in determining the cause of intermittent complaints of acute testicular pain in young boys who have spontaneously "detorsed" their testes by the time they reach their physician.

### Torsion of an Appendage

Torsion of the appendix testis or appendix epididymis can occur in young boys also. Here,

TABLE 1.—*Differential Diagnosis of Painful Scrotal Lesions*

	<i>Epididymitis</i>	<i>Torsion of Spermatic Cord</i>
Age of onset .....	Generally greater than 15 years Extends into 20's and 30's	Perinatal peak; peripubertal peak Extends into 20's and 30's
Character of pain .....	Gradual in onset	Sudden, acute, severe
Position of testes .....	Dependent	Retracted; high-riding
Fever .....	Sometimes present, low-grade	Absent
Analysis of urine .....	± Pus cells	No pyuria
Ipsilateral spermatic cord .....	Thickened	Normal
Ipsilateral seminal vesicle .....	Boggy	Normal
Contralateral testis .....	Normal vertical orientation	Possible horizontal orientation

the pain is less acute, and initially the tenderness is confined to the upper pole of the testis. Sometimes in prepubertal males, the *blue-dot sign* can be diagnosed. In these cases, the infarcted appendix can be seen through the thinned scrotal skin. These lesions often have a prolonged morbidity with associated hydrocele formation, and we generally explore them surgically to remove the offending appendix. Exploration of the contralateral appendix is not indicated as it is in torsion of the spermatic cord.

The differential diagnosis of painful scrotal lesions is summarized in Table 1.

## REFERENCES

1. Berger RE, Alexander ER, Monda GD, et al: *Chlamydia trachomatis* as a cause of acute "idiopathic" epididymitis. *N Engl J Med* 298:301-304, Feb 1978
2. Perri AJ, Slachta GA, Feldman AE, et al: The Doppler stethoscope and diagnosis of the acute scrotum. *J Urol* 116:598-600, Nov 1976
3. Hahn LI, Nadel ES, Gillee MH, et al: Testicular scanning: A new modality for the preoperative diagnosis of testicular torsion. *J Urol* 113:60-62, Jan 1975
4. Smith SP, King LR: Torsion of the testis: Techniques of assessment. *Urol Clin N Am* 6:429-443, Jun 1979

## FOR ADDITIONAL READING

- Hanstead B, John HT: Idiopathic scrotal edema of children. *Br J Urol* 36:110-112, Mar 1964
- Kaplan GW, King LR: Acute scrotal swelling in children. *J Urol* 104:219-223, Jul 1970
- Madsen PO: Acute epididymitis vs torsion of the spermatic cord in military service. *J Urol* 83:169, 1960
- Riggs S, Sanford JP: Viral orchitis. *N Engl J Med* 266:490, 1962
- Williamson RCN: Torsion of the testis and allied conditions. *Br J Surg* 63:465-476, Jun 1976

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## Information

# Backache: Its Changing Prevalence

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IN 1974 CALIFORNIA HOSPITALS discharged 3,644,770 patients; in 1977 the number discharged was 2,758,122, representing a 24.3 percent decline over the three years.<sup>1</sup> This decline in hospital use remains unexplained, but the same phenomenon seems to have affected the rate of hospitalization for low back pain.

In 1977 Homer C. Pheasant<sup>2</sup> calculated the incidence and cost of inpatient care for low back pain in California. His findings were based on the *Length of Stay in California Hospitals (1974)*,<sup>3</sup> an independent compendium of hospital discharges and surgical procedures which gives a fairly representative survey of hospital usage in California. This article compares the 1974 statistics with those of 1977.

There are 13 diagnostic categories that represent almost all conditions identified as backache.

From the tables listed in *Length of Stay in California Hospitals*, it is possible to determine the average length of stay and the total number of patient days. This 1974 edition surveyed 214 hospitals with 33 percent of all hospital beds, and in 1977 it dealt with 205 hospitals and 36 percent of all hospital beds in the state. From the above information, the total projected number of hospital discharges and total patient days were calculated and compared (Table 1).

Nearly 23 percent fewer patients were in California hospitals in 1977 with complaints of low back pain than in 1974. This decline closely parallels the 24.3 percent decline in overall discharges. With the exception of three specific diagnostic categories: prolapse of the lumbosacral disc (decreased 25.7 percent), lumbalgia (decreased 8.4 percent), and strain and sprain of other unspecified parts of the back (decreased 3.2 percent), the largest declines in hospital usage were in the less specific diagnostic categories of back pain, such as prolapsed disc at unspecified sites (decreased 38.1 percent), strain or sprain of the lumbosacral joint (decreased 36.9 percent), lumbar strain or sprain (decreased 34.4 percent) and low back pain (decreased 24.8 percent). However, some specific diagnostic categories did not have a proportionate decline and, in fact, had a relative increase such as sciatica (decreased 6.0 percent) and radicular syndrome of the lower extremities (decreased 8.8 percent) when compared with the overall decline in hospital discharges of 24.3 percent.

From the length of stay data, the total number of patients who underwent surgical procedures for

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